

## PRE-APPEAL BRIEF REMARKS

Applicant submits that the current final office action issued by the Examiner in the present application contains clear errors in the Examiner's rejections as well as omissions of one or more essential elements needed for a prima facie rejection.

The following claims are currently pending in the application: 1-5 and 32-46. All of the claims have been rejected under 35 USC §102(e) as being anticipated by Brown et al. (US Pat 6,665,666 B1) hereinafter "Brown". In addition, claims 1-5 and 32-36 have been objected to for not being tied to a particular machine or transformation (the Bilski test) and for not describing a "computer readable medium". The "computer readable medium claims are numbered from 37-46, however. These 'objections' are not addressed herein.

### 35 USC §102(e) Rejection

#### **A. The Brown Reference Does Not Teach Parsing A Question Into A Series Of Syntactic Categories, Generating An Analyzed Question Comprised Of Syntactic Categories, Or Transforming A Question Pattern Into A Partially Unspecified Statement Needed For A Prima Facie Rejection**

The 35 USC §102(e) rejection of the claims is in error because the Examiner has mischaracterized the teachings and disclosure of Brown. The main reason that Brown does not comport with the claims of the present application is that Brown focuses on the "words" of a question (query) while the claims focus on transforming the structure of a question (query) into one or more anticipated or likely structures the answer would take with a partially unspecified portion representing the answer to the question. Brown transforms a question into a bag of words including QA-Tokens and submits same to a search engine in hopes of finding an answer within a specified window of the document in which the specified window contains exact matches to the bag of words and a logical match to the partially unspecified QA-Tokens. The claims of the present application, however, transform a specific question with the aid of syntactic categories into the expected *format or structure* (statement) the answer would take in a document and search for matches to the transformed statement within the document.

## 1. The Present Application

The present application describes embodiments of a process by which an analyzed question is generated by subjecting a question to syntactic and morphological analysis, which assigns syntactic and/or morphological categories to portions of the question. (§[0039] published application) For example, syntactic and morphological analysis of the question "Who did the boy see?" generates the analyzed question: "(\*WH who) (\*AUX did) (\*NP (\*DET the) (\*N boy)) (\*V see)?" (§[0073]-[0075] published application) The assigned capitalized categories are question word (WH), auxiliary verb (AUX), noun phrase (NP), determiner (DET), noun (N), and verb (V). (§[0053]-[0070] published application)

Once the analyzed question is generated, the question terms and instances of the auxiliary verb morphological category are ignored. For example, the analyzed question above becomes "WH NP V" and is used to identify a predetermined question pattern, such as "WH1 NP0 V," from a table of predetermined question patterns. (§[0076]-[0079] published application) The predetermined question pattern is then used to identify predetermined statement patterns such as "NP0 V NP1" and "NP1 REL NP0 V." (§[0081] published application) These predetermined statement patterns, expressed in terms of syntactic and/or morphological categories, have *structures* corresponding to appropriate answers to the question. (§[0040] published application) The predetermined statement patterns represent potential statement structures for actual answers in the body of information being searched. The set of predetermined statement patterns are then modified by replacing the instances of syntactic and morphological criteria with words from the question and a *partially unspecified term*, yielding partially unspecified queries such as "the boy saw [NHUM]" and "[NHUM] who the boy saw." (§[0082]-[0101] published application) The partially unspecified term "[NHUM]" restricts the matches for that term to human nouns since the question word of the question was "who," indicating the answer to be a person.

## 2. The Prior Art Brown Reference

The Brown reference generally teaches providing a hit-list of documents that satisfy a search query where the query is in the form of a natural language question containing a question word. Brown describes a three stage process of converting a question to an analyzed

query that will be submitted to a search engine. Brown characterizes itself thusly, “[t]he main idea disclosed here is the following: Suppose the system can automatically determine that the answer to a given question is one or more of the special QA-Tokens [765]. Then submitting a bag of words which consists of the QA-Tokens [765] and some (all) of the words in the question (which is discussed in more detail later in this section) to the corpus for search will result in a set of text fragments containing the answer.” (c.9, ll. 53-64). Stage I is a three step process including: 1) determine the set of QA-Tokens which describe the answer; 2) determine which words of the questions should be submitted to the search; and 3) determine which other words/phrases are relevant to be submitted to the search. (c. 10, ll. 1-12) Stage II is a two step process including: 1) finding the lemma form of a given word; and 2) finding all the equivalent canonical forms of a word or set of words. (c. 12, ll. 42-48) Stage III consists of attaching weights to query terms and specifying the text window within which the search engine is to operate. (c. 13, ll. 5-8)

For instance, the question word “when” is replaced with a QA token of TIME\$ and/or DATE\$ since the word “when” implies time and results to the query will likely include a reference to a time or a date. An original query such as “when did the Challenger explode” is converted to a *bag of words* query that looks like {@SYN(TIME\$, DATE\$) Challenger explode}.. (c.5, ll. 58-66) This bag of words is then searched against a database of documents to find matches to the query terms within a specified window of sentences. (c.16, ll. 5-12). Any matches found by Brown are returned as a hit-list of documents *not* as an answer to the original query.

Moreover, the Brown reference also requires that the text collection from where the answer is to be derived also be augmented with QA-Tokens. (c.4, ll. 47-48) Thus, the query processing in Brown *only* works in conjunction with an *augmented* text collection of documents. This extra level of processing is not required by the claims of the present application.

Brown is focused on transformations of query words and does not concern itself with query *structure*. This is evident from the analyzed query being comprised of a *bag of words* and a QA-Token. The search itself is constrained to a window within a given document (augmented text collection) indicating that there is no *structure* to the query.

**B. The Brown Reference Does Not Teach Parsing A Question Into A Series Of Syntactic Categories, Generating An Analyzed Question Comprised Of Syntactic Categories, Transforming A Question Pattern Into A Partially Unspecified Statement, Or Generating Partially Unspecified Queries From The Partially Unspecified Statements As Set Out In Independent Claims 1, 35, 37 And 45.**

The Examiner cites Brown (c.3, ll. 47-60, c.4, ll. 1-14, c.5, ll. 7-10, and c.11, ll. 61-65) as teaching the first, second and third steps of claims 1, 35, 37 and 45, *parsing the question into a series of syntactic categories, generating an analyzed question comprising the syntactic categories of the parsed question and identifying one or more predetermined question patterns within the analyzed question*. This is a mischaracterization of the teachings of Brown. The parsing step described in the present application takes a question such as "When did Bell invent the telephone?" and parses it into "(\*WHEN when) (\*AUX did) (\*NP (\*N Bell)) (\*V invent) (\*NP(\*DET the) (\*N telephone)))" (¶[0073]-[0075] published application) The assigned syntactic categories are question word (WHEN), auxiliary (AUX), noun phrase (NP), noun (N), verb (V), determiner (DET) and noun (N). (¶[0107] published application) The generated analyzed question is comprised **completely** of syntactic categories (WHEN NP V NP) (¶[0109] published application) having a particular **structure** with no actual words from the question.

Brown clearly describes the outcome of its query processing stage as a "bag of words" consisting of a set of QA-Tokens **and** some of the **words** in the question. (c.10, ll. 1-5) Had Brown processed the question "Who did the boy see?" the parsing/generating outcome would more likely resemble "{@SYN(PERSON\$) boy see}" which is **not** a series of syntactic categories **only** as described and claimed in the present application.

The next steps of claims 1, 35, 37 and 45 mark a radical departure from the teachings of Brown. The steps of *transforming of question patterns into partially unspecified statements, generating partially unspecified queries corresponding to partially unspecified statements, and determining answers by matching the partially unspecified queries to stored information* have no equivalent in Brown and are, consequently, not taught by Brown. This is because the present application describes transforming the **structure** of a question into the expected **structure(s)** of the answer to the question while Brown describes transforming a question using word variations (including QA-Tokens) and actual query words. Thus, the present claims describe an analyzed query as comprising an affirmative statement having a partially unspecified component that will be fed into a search engine while Brown describes an analyzed query as

comprising an unstructured *bag of words* having a partially unspecified component (QA-Token) that will be fed into a search engine.

Continuing the example above, the original query "When did Bell invent the telephone" will be transformed by the present invention to an analyzed query that includes possible matches such as: (1) [DATE] Bell invented the telephone; (2) Bell [DATE] invented the telephone; (3) Bell invented [DATE] the telephone; (4) Bell invented the telephone [DATE]; (5) The telephone which Bell [DATE] invented; and (6) The telephone which bell invented [DATE], ((¶[0116]-[0121] published application) where the partially unspecified term [DATE] will be a match to text representing a date (e.g., "in 1876").

However, Brown would likely transform the same query to: {@SYN(TIME\$, DATE\$) Bell invent telephone} where the partially unspecified term @SYN(TIME\$, DATE\$ can also be a match to text representing a date (e.g., "in 1876"). At this point the present application searches documents for *exact matches* to one of the six phrases above while Brown searches documents in which all of the transformed query terms (bag of words) and QA-Tokens are found within a specified window of the document.

Thus, Brown's use of question templates and pattern files as applied to question words have been mischaracterized by the Examiner and do not teach the specific transformation of a question to an affirmative statement pattern as described and claimed in the present application.

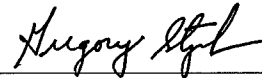
### C. Conclusion

In sum, the Brown reference fails to teach or disclose all of the elements and/or steps of claims 1, 35, 37 and 45 as asserted by the Examiner and required under 35 USC §102(e). Thus, the Examiner's rejection contains clear errors in as well as omissions of one or more essential elements needed for a prima facie rejection.

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